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## DESCRIPTION

attached to an application for a

## BELGIAN PATENT

registered by POLYPAL

for a: Box-section Tubular Profile

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Category of request: PATENT

Box-section Tubular Profile

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This invention applies to a reinforced tubular profile to be used for forming support beams.

The problem that the invention aims to solve is that of producing a tubular profile capable of bearing significant loads while being made from low-thickness sheet metal, so that it may be produced more economically than other profiles bearing the same weight.

In order to resolve this problem, the invention proposes a box-section tubular profile formed from a single sheet forming lateral faces or webs and flanges that connect the ends of the webs. The abovementioned flanges are formed from an extension of the same sheet, folded at a perpendicular angle to the web planes to form two supports of stacked layers facing each other along their edges closest to the middle plane of the profile, parallel to the webs, each support of stacked layers comprising an odd number of layers.

These flanges can be formed from the sheet being folded either inward or outward from each web. The webs are conveniently created with a longitudinal rib turned toward the inside of the profile.

The invention is described in detail below with reference to the attached drawings, on which: Figures 1. and 2. show two modes of execution of a first example of the tubular profile according to the invention;

Figures 3. and 4. show two modes of execution of a second tubular profile example according to the invention.

5       The tubular profile is made from a low-thickness metal sheet folded to form a box section as illustrated in the drawings. Profile 10 comprises two lateral faces or webs (1) and two horizontal flanges (2) that connect the ends of the webs (1)

Each flange (2) is formed from an extension of the web sheeting, folded at a perpendicular angle to the web planes to form two supports of stacked layers (3, 4) facing each other along their edges closest to the middle plane (I) of the profile, parallel to the webs (1). In each of the supports (3 and 4) the number of stacked layers is uneven and at least equal to three, of stacked layers comprising an odd number of layers. In the example illustrated in Figures 1. and 2., supports 3 and 4 comprise three stacked layers and in the example illustrated in Figures 3. and 4., supports 3 and 4 comprise 5 stacked layers.

25       Figures 1. and 3. show the flanges (2) formed by the sheet folded inward from each web (1). Figures 2. and 4. show the flanges (2) formed by the sheet folded outwardly from the webs (1).

30       The numerical reference 5 refers to the shaping joint. This joint can be left open or closed with a welded seam.

A profile as described enables beams able to bear 1000kg per running metre to be produced using sheets with a thickness of 1.5mm.

5 By way of comparison it can be noted that a classic rectangular-section profile with the same external dimensions and able to bear an equivalent weight must be produced using a 2.9mm thick sheet. The profile in the invention thus enables a saving in materials of some 20%.

10 Following another mode of execution illustrated in Figures 5. to 8., the webs (1) of the profile are formed with a longitudinal rib (6) turned toward the inside of the profile. The effect of these ribs (6) is to increase the lateral webs' (1) moment of inertia in relation to a horizontal transverse axis and thus serves to stiffen the web.

CLAIMS

1. Box-section tubular profile, characterised by its being constructed from a single sheet forming lateral faces or webs (1) and flanges (2) that connect the ends of the webs, and by the construction of the flanges from an extension of the said sheet, folded at a perpendicular angle to the web planes (1) to form two supports (3, 4) of stacked layers which face each other along their edges closest to the middle plane (I) of the profile, parallel to the webs (1), each support of stacked layers comprising an uneven number of layers.
2. Box-section tubular profile following claim 1, characterised by the flanges (2) being formed from the sheet being folded toward the inside of the profile from each web (1).
3. Box-section tubular profile following claim 1, characterised by the flanges (2) being formed from the sheet being folded toward the outside of the profile from each web (1).
4. Box-section tubular profile following any of claims 1-3, characterised by the flanges (2) being created with a longitudinal rib turned toward the inside of the profile.

VDP

Brussels, 11 December 1981  
For Polypal  
Bureau Vander Haeghen  
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